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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/731,995      | 12/09/2003  | Todd O. Bolken       | 6047-67518          | 5870             |

7590 12/01/2004  
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| EXAMINER     |
|--------------|
| ROMAN, ANGEL |

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2812     |              |

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/731,995 | <b>Applicant(s)</b><br>BOLKEN ET AL. |  |
|                              | <b>Examiner</b><br>Angel Roman       | <b>Art Unit</b><br>2812              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 September 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 40-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40-46 is/are allowed.
- 6) ☒ Claim(s) 47, 48 and 50-55 is/are rejected.
- 7) ☒ Claim(s) 49 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/22/04</u>  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 47, 48, 50-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsunoda et al. U.S. Patent 5,914,531 A.

Tsunoda et al. discloses a mold for molding a package for at least one die 1 bonded to a substrate 2, the mold comprising a first mold portion that defines a package cover for encapsulating the at least one die and at least a perimeter portion of a surface to which the die is bonded, and a second mold portion that defines a rib that projects outwardly from a surface of the substrate opposite the surface of the substrate to which the at least one die is bonded; wherein the first mold portion and the second mold portion define package covers and ribs for a plurality of die bonded to one or more substrate (see figure 3B) and the first mold portion is configure to encapsulate at least a portion of an edge of the substrate to which at least the one die is bonded. Tsunoda et al. also discloses a mold for molding a package for a ball grid array assembly having a surface configure to receive solder bumps, comprising a first mold portion and a second

mold portion that define a cavity that substantially covers the ball grid array assembly except at the surface configured to receive the solder bumps; wherein the cavity defines by the first mold portion and the second mold portion includes a rib portion configured to defined a plurality of ribs on the surface configured to received solder bumps; and wherein the cavity defined by the first mold portion and the second mold portion includes a perimeter portion associated with encapsulation of at least a portion of a perimeter of the surface configured to received solder bumps and the perimeter portion of the cavity defines a rib that extends along a perimeter of the surface configured to received solder bumps (see figures 1-51).

***Allowable Subject Matter***

3. Claims 40-46 are allowed.
4. Claim 49 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record either singularly or in combination failed to anticipate or render obvious the limitations of defining the ribs having a thickness at least as great as a solder bump thickness.

### ***Response to Arguments***

6. Applicant's arguments filed 09/27/04 with respect to claims 47, 48, 50-55 have been fully considered but they are not persuasive. Regarding Applicant's argument that Tsunoda et al. does not teach a mold for a package cover for encapsulating at least a perimeter portion of a surface to which the die is bonded and instead teaches a perimeter portion of a surface of a circuit board 2 attached to a lead frame, this argument is not convincing because Tsunoda et al. teaches encapsulating a part of the lead frame in contact with a part of a perimeter of the board 2 therefore a perimeter of the board 2 is also encapsulated even though the encapsulant is not in direct contact with that part of the substrate perimeter. Furthermore, Tsunoda et al. teaches directly encapsulating at least part of a substrate perimeter not in contact with the lead frame (see figure 1). With respect to applicants argument that Tsunoda et al. does not teach encapsulating a lead frame, the lead frame part not encapsulated are cut off from the assembly and the remaining parts are encapsulated (see figure 4B), furthermore the ball grid array assembly is substantially covered in the molding process (see figure 3B).

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

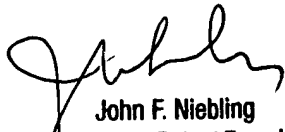
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (571) 272-1681. The examiner can normally be reached on Monday-Friday 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AR  
November 27, 2004

  
John F. Niebling  
Supervisory Patent Examiner  
Technology Center 2800